

Title: A tale of two sources: responses of urban vegetation to vehicle emissions and fertilizer application

Abstract:

Cities are complex ecosystems where both social and ecological factors influence biogeochemical cycles. For example, urban areas have highly altered nitrogen (N) cycles as the result of increased N inputs from human activity. These inputs (sources) include fossil fuel combustion and fertilizer application, which can both impact air and water quality. In fact, urban areas receive higher rates of N deposition than more rural areas, with urban roads serving as hotspots of N deposition. In addition, surveys have shown that the majority of homeowners fertilize their yards. The complexity of these integrated systems has caused urban researchers to find new approaches to studying these unique areas. My research aims to better understand the spatial distribution of N in cities, by evaluating the connection between N sources and the myriad of factors that influence these inputs. Some of these factors include human socioeconomic status, sociodemographic status, traffic density, and fertilizer use. I use the foliar chemistries of urban vegetation to explore these relationships between humans and the N cycle, as plants are bio-monitors of the environment. In this talk, I will present my findings from several projects that have explored connections between foliar N (N content and stable isotope composition) and biophysical and social factors, in two semi-arid western cities, Salt Lake City, UT and Los Angeles, CA.